The death of electric current

A contribution to electromagnetic theory

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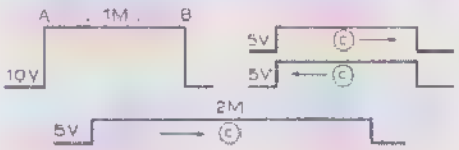
The reed relay pulse generator was a means of generating a fast pulse using rather primitive methods. A one-metre section of 50-ohm coaxial cable AB was charged up to a steady 10 volts (say) via a one megohm resistor, and then suddenly discharged into a long piece of coax BC by the closure of two switches.

A five-volt pulse two metres wide was found to travel off to the right at the speed of light for the dielectric on closure of the switches, leaving the section AB completely discharged. (The practical device lacked the second, lower switch at B, which is added in the diagram to simplify the argument).

The curious point is that the width of the pulse travelling off down BC is twice as much as the time delay for a signal between A and B. Also, the voltage is half of what one would expect. It appears that after the switch was closed, some energy current must have started off to the *left, away* from the now closed switch; bounced off the open circuit at A, and then returned all the way back to the switch at B and beyond.



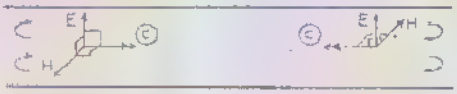
This paradox, that when the switches are closed, energy current promptly rushes *away* from the path suddenly made available, is understandable if one postulates that a steady charged capacitor is not steady at all; it contains energy current, half of it travelling to the right at the speed of light, and the other half travelling to the left at the speed of light.

Now it becomes obvious that when the switches are closed, the rightwards travelling energy current will exit down BC first, immediately followed by the leftwards travelling energy current after it has bounced off the open circuit at A.

We are driving towards the principle that *energy (current) E×H cannot stand still; it can only travel at the speed of light.* Any apparently steady field is a combination of two energy currents travelling in opposite directions at the speed of light[7].

E and *H* always travel together in fixed proportion Z_0.

Electric charge does not exist according to Theory C. The so-called electric charge is merely the edge of two reciprocating energy currents. In the case of the so-called steady charged capacitor, the electric fields of the two energy currents add but the magnetic fields cancel, so that it has come to be thought that a charged capacitor is devoid of magnetic field.



Now let us consider a simple circuit with battery and resistor. Two conductors guide the energy current from battery to resistor. It enters the resistor *sideways*

(Kip 1962)[6]. 'Electric current' is merely the side of a wave of energy current. If a 'conductor' is perfect, the energy current has a sharp side; the so-called 'electric current' has infinite density in the outside surface of the 'electric conductor', which Heaviside called an obstructor.

Energy current penetrates an imperfect conductor in the same way as it enters a resistor, from the side. In this case, the region containing a variation in energy current density, the so-called 'electric current', widens and penetrates into the conductor; skin depth is no longer zero.

Nothing exists behind a mirror; nothing happens there. The velocity of the 'things' behind a mirror does not depend on the medium, or material, behind the mirror[8].

As Maxwell's equations show,[9] 'electric current' is always derivable as the gradient on the side of a wave of energy current. Unlike energy current (but like the images in a mirror), electric current contains no energy, it has no function, and it explains nothing. Electric current does not exist.

Although a cloud cannot exist without edges, the *edges* of a cloud do not exist. They have no width, volume, or materiality. However, the *edges* of a cloud can be drawn. Their shapes can be manipulated graphically and mathematically. The same is true of the so-called 'electric current'.

In the following analogies, the sheep represent energy, the dogs electricity.

Theory N. The sheep are forced out of the pen by the sheep-dogs. The dogs then run alongside the sheep. There can only be a forward flow if sheep-dogs first advance on both sides of the flow of sheep, which the dogs direct and cause.

Theory H. The sheep rush out of the pen into the great open spaces. They will go forward regardless, but their direction is actively guided by the sheep-dogs running alongside, the front of the line of dogs always keeping level with the foremost sheep.

Theory C. There are no sheep-dogs. The sheep leave the pen and flow out into the great open spaces. Some of the space is rougher. (This rough space was previously thought to be the terrain preferred by the dogs.) Here fewer sheep go, and their rate of advance is slower. Some ground is very obstructive, nearly impassable for sheep.